

WHAT IS CLAIMED IS:

1. A transparent/translucent panel unit for varying the level of light passing therethrough comprising:
 - a pair of spaced-apart transparent/translucent panels; and
 - a plurality of light-controlling members positioned between the panels and mounted for rotation about their longitudinal axes,
 - the light-controlling members each having at least one substantially light-blocking surface and at least one engagement surface in contact with an engagement surface of an adjacent light-controlling member,
 - whereby the plurality of light-controlling members may be rotated by imparting rotary motion to at least one of the light-controlling members and transmitting the rotary motion across the contacting engagement surfaces of adjacent light-controlling members to rotate the light-blocking surfaces and vary the level of light passing through the panel unit.
2. The transparent/translucent panel unit of claim 1 in which the spaced-apart transparent/translucent panels are generally parallel to each other.
3. The transparent/translucent panel unit of claim 1 in which the panels are made from a material chosen from the group consisting of plastics, fiberglass, perforated metal fabric, and glass.
4. The transparent/translucent panel unit of claim 1 in which the panels are chosen from the group consisting of honeycomb cross-section polycarbonate translucent panels and rectangular cross-section polycarbonate translucent panels..
5. The transparent/translucent panel unit of claim 1 in which the panels are elongated and the light-controlling members and their light-blocking surfaces generally correspond in length to the length of the panels.
6. The transparent/translucent panel unit of claim 5 in which the panels are from about 4 feet to about 40 feet in length.

7. The transparent/translucent panel unit of claim 1 in which the transparent/translucent panels are tinted.

8. The transparent/translucent panel unit of claim 1 in which the light-controlling members are positioned in abutting relationship.

9. The transparent/translucent panel unit of claim 1 in which the engagement surfaces of the light-controlling members are circular.

10. The transparent/translucent panel unit of claim 9 in which the circular engagement surfaces extend at least about 180° about the circumference of the light-controlling members.

11. The transparent/translucent panel unit of claim 9 in which the circular engagement surfaces extend 360° about the circumference of the light-controlling members.

12. The transparent/translucent panel unit of claim 1 in which the light-controlling members are elongated tubes having an outer circular surface extending at least about 180°.

13. The transparent/translucent panel unit of claim 12 in which a plurality of rings are spaced along the outer circular surface of the tubes generally perpendicularly to the longitudinal axes of the tubes to achieve rotation of the light-controlling member through 360°.

14. The transparent/translucent panel unit of claim 1 in which the light-controlling members are elongated tubes having an outer circular rotational surface extending at least about 360°.

15. The transparent/translucent panel unit of claim 1 in which the light-controlling members are spaced from each other while the engagement surfaces remain in contact.

16. The transparent/translucent panel unit of claim 12 in which the light-blocking members are generally planar and positioned across the diameter of the tube.

17. The transparent/translucent panel unit of claim 14 in which the light-blocking members are generally planar and positioned across the diameter of the tube.

18. The transparent/translucent panel unit of claim 16 in which the tube and light-blocking member are co-extruded.

19. The transparent/translucent panel unit of claim 17 in which the tube and light-blocking member are co-extruded.

20. The transparent/translucent panel unit of claim 1 in which the light-controlling members comprise a generally planar light-blocking surface supported within a plurality of rings spaced longitudinally along the light controlling member to achieve rotation of the light-controlling member through 360°.

21. The transparent/translucent panel unit of claim 1 in which the light-controlling members are tubular and include longitudinal sills projecting radially from the outer surface of the tubes.

22. The transparent/translucent panel unit of claim 21 in which the sills are light-blocking.

23. The transparent/translucent panel unit of claim 22 in which adjacent light-controlling members are positioned so that the sills at least partially abut as the light-controlling members rotate.

24. The transparent/translucent panel unit of claim 1 in which the light-controlling members include a first tube with a hemispherical cross-section and an opaque surface across the diameter of the tube and a second tube with a hemispherical cross-section attached across the diameter of the first tube to provide a 360° tubular outer circular rotation surface.

25. The transparent/translucent panel unit of claim 1 in which the light-blocking surfaces include photovoltaic solar cells.

26. The transparent/translucent panel unit of claim 1 in which the light-blocking surfaces are substantially opaque.

27. The transparent/translucent panel unit of claim 1 in which the light-blocking surfaces are substantially semi-opaque.

28. The transparent/translucent panel unit of claim 1 including at least one elongated carriage member having a series of scalloped surfaces, the carriage member being positioned between the panels with individual light-controlling members supported for rotational movement within corresponding scalloped surfaces in the carriage member.

29. The transparent/translucent panel unit of claim 28 including a plurality of carriage members spaced longitudinally along the light-controlling members.

30. The transparent/translucent panel unit of claim 28 in which opposed pairs of top and bottom carriage members are used to define annular openings for supporting the light-controlling members for rotational movement.

31. The transparent/translucent panel unit of claim 28 in which the carriage members are made of a low friction material or are coated at the scallops with a slippery coating.

32. The transparent/translucent panel unit of claim 1 in which the engagement surfaces comprise bands of a high coefficient of friction material positioned in alignment on adjacent light-controlling members.

33. The transparent/translucent panel unit of claim 1 in which the engagement surfaces comprise one or more notched bands positioned in alignment on adjacent light-controlling members.

34. The transparent/translucent panel unit of claim 1 in which the light-controlling members comprise elongated tubes having a cogwheel cross-section including a series of teeth extending along their length so that light-transmitting members intermesh to transmit motion imparted to one member across a plurality of intermeshed light-controlling members.

35. The transparent/translucent panel unit of claim 34 in which the light-blocking member is positioned within the cogwheel cross-section between a diametrically opposed pair of teeth.

36. The transparent/translucent panel unit of claim 1 including a panel of a non-combustible generally light-transmitting material positioned within the panel unit above the light-controlling members.

37. The transparent/translucent panel unit of claim 1 including an air space between the panels and a light-transmitting fire resistant insulating material disposed within the air space.

38. A transparent/translucent panel system for varying the level of light passing therethrough comprising:

- a plurality of individually assembled panel units joined to adjacent panel units, the panel units including

- a pair of spaced-apart transparent/translucent panels; and

- a plurality of light-controlling members positioned in the space between the panels and mounted for rotation about their longitudinal axes,

- the light-controlling members each having at least one substantially light-blocking surface and at least one engagement surface in contact with an engagement surface of an adjacent light-controlling member,

- whereby the plurality of light-controlling members within the units may be rotated by imparting rotary motion to at least one of the light-controlling members in the unit and transmitting the rotary motion across the contacting engagement

surfaces of adjacent light-controlling members to rotate the light-blocking surfaces and vary the level of light passing through the unit.

39. A transparent/translucent panel unit for varying the level of light passing therethrough comprising:

a pair of spaced-apart transparent/translucent panels; and

a plurality of elongated tubular light-controlling members positioned between the panels and mounted for rotation about their longitudinal axes,

the light-controlling members each having at least one substantially light-blocking surface, at least one circular engagement surface in contact with an engagement surface of an adjacent light-controlling member, and longitudinal, light-blocking sills projecting radially from the outer surface of the tube,

whereby the plurality of light-controlling members may be rotated by imparting rotary motion to at least one of the light-controlling members and transmitting the rotary motion across the contacting engagement surfaces of adjacent light-controlling members to rotate the light-blocking surfaces and vary the level of light passing through the panel unit.

40. A transparent/translucent panel unit for varying the level of light passing therethrough comprising:

a pair of spaced-apart transparent/translucent panels; and

a plurality of light-controlling members having at least one substantially light-blocking surface, positioned between the panels,

the light-controlling members each being mounted for rotation about their longitudinal axes by the application of rotary motion at one end of each light-controlling member.

41. The transparent/translucent panel unit of claim 40 in which the adjacent light-controlling members are positioned in abutting relationship.

42. The transparent/translucent panel unit of claim 40 in which the adjacent light-controlling members are tubular and have longitudinal, light-blocking sills projecting radially from the outer surface of the tube.

43. The transparent/translucent panel unit of claim 3 in which the panel is made from a polycarbonate or acrylic plastic.

44. The transparent/translucent panel unit of claim 1 in which the light-blocking surface of at least one light controlling member is segmented into at least one transparent/translucent portion and at least one opaque portion.

45. The transparent/translucent panel unit of claim 1 in which the light-blocking surfaces of a plurality of the light-controlling members are segmented to each include at least one transparent/translucent segment and at least one opaque segment.

46. A transparent/translucent panel unit for varying the level of light passing therethrough comprising:

a pair of spaced-apart transparent/translucent panels; and

a plurality of light-controlling members having at least one substantially light-blocking surface, positioned between the panels,

the light-controlling members each being mounted for rotation about their longitudinal axes by the direct or indirect application of rotary motion to the light-controlling members.

47. The transparent/translucent panel of claim 46 in which the light-controlling members and means for applying rotary motion thereto are substantially housed between the pair of spaced-apart panels.